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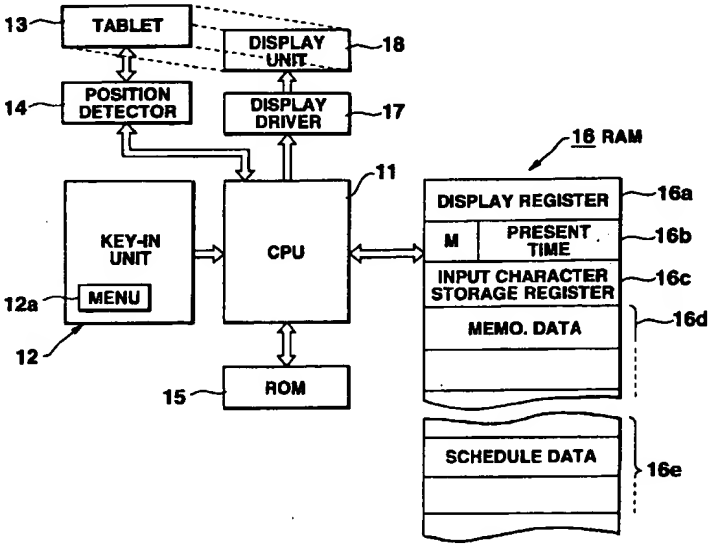
(54) Character input devices and methods

(57) An input device including a display unit (18) for displaying thereon characters entered from a keyboard or by a pen inputting operation, a character selector including a tablet (13) for selecting any character from among the characters displayed on the display unit, and a CPU (11) for receiving the characters selected by the character selector as a new input. When any character is selected from an already input character string displayed on the display unit, the selected character is added as a new character input to the already input characters, and displayed together on the display unit.

FIG.1


13
TABLET
DISPLAY UNIT
18
14
POSITION DETECTOR
DISPLAY DRIVER
17
16 RAM
11
DISPLAY REGISTER
16a
KEY-IN UNIT
CPU
M
PRESENT TIME
16b
INPUT CHARACTER STORAGE REGISTER
16c
12a
MENU
MEMO. DATA
16d
12
15
ROM
SCHEDULE DATA
16e

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Description

The present invention relates to character input devices and methods for entering characters such as characters/numerals, and recording mediums which contain a character input program, and more particularly to a character input device which have a pen input function, a character converting function, a character recognizing function, and a mouse to perform a character input operation and a method and recording medium which fulfills such functions.

Conventionally, when a document such as a schedule or a memorandum is entered in information devices such as electronic notebooks and/or PDAs (Personal Digital Assistants) having a pen input function, input characters handwritten with a pen on a tablet are recognized and entered or a software keyboard is displayed on a display screen with a tablet is displayed and appropriate displayed characters on the software keyboard are touched with the pen for entering purposes.

There are software having copying and pasting functions and/or cutting and pasting functions installed in a personal computer in which the user enters characters from a keyboard, specifies and any one of the entered characters, for example, with a mouse copies and pastes it at a desired position.

When handwritten characters entered with a pen are recognized in an information device such as an electronic notebook having a conventional pen input function, the user's handwriting greatly influences the rate of character recognition. Thus, it takes much time to recognize and input all the letters in a document to be inputted.

Also, when a software keyboard displayed on a pen input display screen is touched with a pen to input characters, one key area is very narrow and difficult to touch with a pen. Thus, operability is low and it takes much time to input all the data in the document to be inputted.

In addition, in order to fulfil the copying and the pasting function of a personal computer, etc., a process must be performed in which characters to be copied are selected, a "copy" is selected from a menu, a position at which the copied characters are pasted is specified, and a "paste" is then selected from the menu, which takes much time.

It is therefore an object of the present invention to provide a character input device and method which is capable of entering characters easily, efficiently and rapidly, without keying or writing in all desired characters from a keyboard or with a pen, and converting and recognizing all desired characters, and also to provide a recording medium which contains a character input program permitting such character input operation.

In order to achieve the above object, the present invention provides a character input device comprising:

input means for providing data, and display means for displaying the data provided by the input means;

specifying means for specifying any range of a part of the data displayed on the display means due to a user's operation; and

data adding means for adding data corresponding to the range of a part of the data specified by the specifying means as new input data to the data displayed by the displaying means.

According to such arrangement, characters are inputted efficiently, rapidly and easily in various devices.

FIG. 1 is a block diagram of an electronic circuit of an electronic notebook as an embodiment of an input device according to the present invention;

FIG. 2 is a flow chart of a whole process performed in the electronic notebook;

FIG. 3 is a flow chart of a character input process performed in a memorandum mode of the electronic notebook;

FIG. 4 shows a character input and display state (part 1) involved in the character input process in the memorandum mode of the electronic notebook;

FIG. 5 shows a character input and display state (part 1) involved in the character input process in the memorandum mode of the electronic notebook;

FIG. 6 shows a character input and display state (part 1) involved In the character input process in the memorandum mode of the electronic notebook;

FIG. 7 shows a letter input and display state involved in the letter input process wherein a software keyboard is displayed in a pen input display unit of the electronic notebook;

FIG. 8 shows a character input and display state involved in the character input process performed, using a mouse in a personal computer; and

FIG. 9 shows a letter input and display state involved in the letter input process wherein a software keyboard is displayed in a pen input display unit of the electronic notebook.

An embodiment of an input device according to the present invention will be described next with reference to the accompanying drawings. In order to effectively show the effectiveness of the present invention, the input device of the present invention applied to an input processing for a Japanese language will be described. Of course, the present invention is applicable to not only Japanese, but also to English and all other characters with advantageous effects.

First, a Japanese language includes three kinds of characters; hiragana letters, katakana letters and Chinese characters which are usually used in a mixing manner to compose a series of sentences, so that the expressiveness of the sentences is enhanced and the sentences are easy to read, understand and create.

For example, in an input process using a keyboard, usually, hiragana letters are first inputted, a required portion of the inputted hiragana letters is converted to

Chinese characters or katakana letters to create a series of sentences.

In order to perform another input method, a device using a tablet is recently provided. When characters are handwritten on the tablet with an input pen, the handwritten characters are recognized and converted to text data to thereby input a series of sentences.

An embodiment of the input device according to the present invention will be described next.

FIG. 1 is a block diagram of an electronic circuit of an electronic notebook as the embodiment of the input device according to the present invention. The notebook is provided with a CPU (Central Processing Unit) 11, which starts up a system program contained in a ROM 15 in accordance with a key-in signal entered from a key-in unit 12 or a position detection signal indicative of a pen touch position entered via a position detector 14 from a tablet 13, and controls the operations of the related circuit elements, using a RAM 16 as a work RAM.

CPU 11 is, of course, connected to the key-in unit 12, tablet 13, position detector 14, ROM 15 and RAM 16 and further, for example, a liquid crystal dot matrix display unit 18 via a display driver 17.

The key-in unit 12 is provided with a "menu" key 12a operated to display a menu screen from which to select any one of various operational modes of the electronic notebook such as a schedule mode, memorandum mode, address mode, etc.

The tablet 13 is provided with a transparent panel provided overlapping on the display screen of the display unit 18 and generates an X- and a Y-direction voltage signal corresponding to the position where the pen is touched.

The position detector 14 detects X and Y coordinates on the display screen of the display unit 18 corresponding to the X and Y direction voltage signals depending on a pen touch position whose data is inputted from the tablet 13, and transfers data on the detected X and Y coordinates of the pen touch position to the CPU 11.

Thus, CPU 11 causes the display unit 18 to display the locus of the pen-touched position on the display unit 18 depending on the data on the detected coordinates of the pen-touched position transferred by the position detector 14 and/or determines the contents of the pen-touching operation from the contents of the data displayed on the display unit 18.

The ROM 15 contains a system program which controls the whole operation of the electronic notebook, a plurality of subprograms which control a plurality of operational modes such as a schedule mode, a memorandum mode, and an address mode, and a character recognition program started up when characters are entered in the respective operational modes.

The ROM 15 may be an external recording medium.

The RAM 16 is provided with a display register 16a in which data to be displayed on the display unit 18 is spread and stored as bit map data, a mode register M in which flag data corresponding to a set operational mode is set, a present time register 16b, an input character storage register 16c, a memorandum register 16d, and a schedule data register 16e.

Data on the present year, month, date, day of the week and time are successively updated and stored in the present time register 16b of the RAM 16 on the basis of data on the time counted by a time counter built in the CPU 11.

Character data entered by the pen-touching operation on the tablet 13 are stored in the input character storage register 16c.

Memorandum data and schedule data stored in the input character storage register 16c are transferred to and stored in the memorandum register 16d and schedule data register 16e, respectively, when the character input processes are performed in the respective operational modes.

Data entered, set and retrieved due to the entering operation of the key-in unit 12 and the pen-touching operation on the tablet 13 are displayed on a real time basis on the display unit 18.

The operation of the inventive electronic notebook will be described next with reference to a flow chart of FIG. 2 which shows the whole operation of the notebook. When the "menu" key 12a of the key-in unit 12 is operated, a menu select screen to selectively set an operational mode of the electronic notebook is displayed on the display unit 18 via the display driver 17 (step S1→S2).

The position of one of the displayed icons which represent the respective operational modes is specified by the pen-touching operation on the tablet 13 in the displayed menu select screen, the operational mode selectively specified on the menu select screen is set to start up a corresponding program, and the initial display screen for the selected operational mode is displayed on the display unit 18 in place of the menu select screen (step S3→S4, S5).

In this case, flag data corresponding to the set operational mode is set in the mode register M of RAM 16.

When the memorandum mode is set in the menu select setting process at steps S1-S5, a memorandum mode process is started up (step S6→SA).

When the schedule mode is set, the schedule mode process is started up (step S7→S8).

When the time-piece mode is set, the time-piece mode process is started up (step S9→S10).

When the notebook mode is set, the notebook mode process is started up (step S9→another mode process).

FIG. 3 is a flow chart of a character input process performed in the memorandum mode of the electronic notebook.

FIG. 4 shows a character input and display state (part 1) involved in the character input process in the memorandum mode of the electronic notebook.

FIG. 5 shows a character input and display state (part 2) involved in the character input process in the memorandum mode of the electronic notebook.

When the operational mode of the notebook is set in the memorandum mode in the menu selecting and setting process and the character input process in the memorandum mode is started up, handwritten character recognition areas 13a are displayed in a lower area of the display 18 screen, as shown in FIG. 4A.

Any character or letter is written on the tablet 13 with a pen P and displayed in one of the handwritten character recognition areas 13a, and detected coordinate data corresponding to a locus of the delineation of the written character or letter from the positional detector 14 is inputted to the CPU. When no detected coordinate data are then input for a given time, the pen inputting operation for one character or letter is determined to be completed and a character recognition process is started on the basis of the detected coordinate data corresponding to the locus of the pen-touched position input so far by the position detector 14, the input character is recognized and stored as character data in the input character storage register 16c of RAM 16 (step A1→A2→A3).

The recognized character is then displayed in correspondence to the position of the cursor K displayed in the input character display area which constitutes in an upper portion of the display unit 18, and the cursor K is moved to the next character input and display position (steps A4, A5).

In this way, the input and recognition process of handwritten characters by the pen-touching operation at steps A1-A5 are repeated, so that a certain number of characters are inputted and displayed. When, for example, a Chinese character

"誰"

is then to be inputted, a hiragana letter

"だ"

is first found and touched with the pen P in the inputted character string displayed in the input character display area of the display unit 18, as shown in FIG. 4B. In response to this operation, the hiragana letter

"だ"

displayed in correspondence to the pen-touched position is displayed in an inverted manner (step A6→A7).

When the touching operation on the displayed hiragana letter

"だ"

with the pen P is stopped, the detected coordinate data input from the position detector 14 disappears. In response to this operation, the hiragana letter

"だ"

displayed in the inverted manner by the pen-touching operation is additionally stored as character data in the input character storage register 16c of RAM 16. In addition, this character data is determined as a hiragana letter and displayed in an inverted manner as an unfixed letter in correspondence to the position of the cursor K, as shown in FIG. 4C (step A8→A9→A10, A11).

Simultaneously, the display position of the cursor K is shifted to the next character input display position (step A5).

Subsequently, as shown in FIG. 4D, when a hiragana letter

"れ"

is found and then touched with the pen P in the inputted character string displayed in the input character display area of the display unit 18, the hiragana letter

"れ"

displayed in correspondence to the pen touch position is displayed in an inverted manner (step A6→A7).

When the touching operation on the displayed hiragana letter

"れ"

with the pen P is stopped, an input of the detected coordinate data from the position detector 14 disappears. In response to this operation, the hiragana letter

"れ"

displayed in the inverted manner by the pen-touching operation is additionally stored as character data in the input character storage register 16c of RAM 16. In addition, this character data is determined as a hiragana letter and displayed in an inverted manner as an unfixed letter in correspondence to the position of the cursor K, as shown in FIG. 5A (step A8→A9→A10, A11).

Simultaneously, the display position of the cursor K is shifted to the next character input display position (step A5).

When a function input key "convert" 13b displayed adjacent to the handwritten character recognition area 13a is touched with the pen P in the state where the " " is inputted and displayed in an inverted manner, using the inputted character string displayed in the input character display area of the display unit 18 due to the character specifying operation with the pen P, the inverted displayed hiranagana letters

"だれ"

are converted to a Chinese character

"誰",

as shown in FIG. 5B, and the unfixed hiragana letters

"だれ"

stored in the input character storage register 16c are also converted to the Chinese character

"誰",

which is then stored (step A13→A14).

When the cursor K is to be moved upward, downward, leftward or rightward during the character inputting operation, a corresponding cursor key (not shown) of the key-in unit 12 is operated (step A13→A14).

FIG. 6 shows a character input and display state (part 3) in the character input process in the memorandum mode of the notebook.

The input and recognition process of handwritten characters by the pen-touching operation at steps A1-A5 are repeated, so that a certain number of characters are inputted and displayed. When, for example, Chinese characters

"新聞 (news paper)"

(news paper)" are then to be inputted, Chinese characters

"新聞"

are first found and their range of indication is touched in a sliding manner, as shown in arrow X, with the pen P in the inputted character string displayed in the input character display area of the display unit 18, as shown in FIG. 6A. In response to this operation, the Chinese characters

"新聞"

displayed in response to the pen-touched range are displayed in an inverted manner (step A6→A7).

When the touching operation on the displayed Chinese characters

"新聞"

with the pen P is stopped, the detected coordinate data input from the position detector 14 disappears. In response to this operation, the Chinese characters

"新聞"

displayed in the inverted manner by the pen-touching operation are additionally stored as character data in order of pen-touching in the input character storage register 16c of RAM 16. In addition, those character data are determined as not being hiragana letters, and displayed in order of pen-touching in correspondence to the position of the cursor K, as shown in FIG. 6B (step A8→A9→A10, A12).

Simultaneously, the display position of the cursor K is shifted to the next character input display position (step A5).

Thus, a desired character to be inputted may be directly pen-touched and inputted as a new character from among the inputted character string displayed in the input character display area of the display unit 18.

Thus, according to the inventive electronic notebook, when a desired character/symbol/character string portion or range is specified directly with the pen touching operation from among the handwritten character string inputted with the pen P on the tablet, recognized and displayed in the input character display area in correspondence to the handwritten character recognition area 13a displayed on the display unit 18, character/symbol/character string data corresponding to the pen-touched position or the pen-touched range is displayed in an inverted manner. Thereafter, when the detachment of the pen P from the tablet 13 is detected, the character or character string data displayed in the inverted manner by the pen-touching operation is additionally displayed as the new input character or character string in correspondence to the display position of the cursor K. Thus, for example, by repeatedly recognizing the individual characters of the whole document entered as memorandum data, a character/character string of the same style which is especially difficult to recognize accurately can be easily inputted directly at a desired position by a simple operation without the need for keying in or handwriting all the desired character string data. Thus, the character inputting efficiency is greatly improved.

While in the embodiment the direct character inputting process with the pen-touching operation, using the character string data inputted and displayed by the character recognition process has been described, in the state where the handwritten character recognition area 13a is displayed on the display unit 18, a direct new-character inputting operation can be easily performed by a pen-touching and inputting operation similar to that described in the embodiment, for example, using character string data inputted and displayed in the key-in process in a software keyboard 13c displayed in the display unit 18, as shown in FIGS. 7A-D.

FIGS. 7A-D show a character input and display state in the character input process in which a software keyboard 13c is displayed in the pen-input display unit 18 of the notebook. As shown in FIG. 7A, when a hiragana letter

"だ"

is found and touched with the pen P in the entered character string displayed in the input character display area of the display unit 18, the hiragana letter

"だ"

displayed in correspondence to the pen-touched position is displayed in an inverted manner. As shown in FIG. 7B, a hiragana letter

"れ"

is found and touched with the pen P in the inputted character string displayed on the input character display area, the hiragana letter

"れ"

displayed in the inverted manner by the previous pen-touching operation is newly inputted and displayed in correspondence to the display position of the cursor K and the hiragana letter

"れ"

displayed in correspondence to the this-time pen-touched position is displayed in an inverted manner.

As shown in FIG. 7C, when the function input "convert" 13b is touched with the pen in the state where the hiragana letter string

"だれ"

inputted directly by the pen-touching operation is displayed in the inverted manner, the hiragana letter string is converted to a Chinese character

"誰",

which is then displayed, as shown in FIG. 7D.

Thus, also in the character input process using the software keyboard 13c, the character input operation is performed efficiently, using the inputted character string.

In the embodiment, a function of displaying input handwritten characters as a new character input by displaying the input handwritten characters as they are and specifying those characters in the pen-touching operation may be provided additionally.

An alphabetical letter input process, using a mouse will be described next. FIGS. 8A and B each show a letter input display state involved in the letter input process in which letters inputted from the keyboard are edited using a mouse L.

As shown in FIG. 8A, when letters "newspaper" are found in the letter string entered at the keyboard displayed in the input letter display area of the display unit 18 and specified with the mouse L, they are displayed in an inverted manner at their specified positions.

When the operation of specifying the displayed letters "newspaper" with the mouse L is stopped, the letters "newspaper" displayed in the inverted manner in the specifying process with the mouse are additionally stored as character data in the input character storage register 16c of the RAM 16 and inputted and displayed in correspondence to the position of the cursor K. Simultaneously, the display position of the cursor K is shifted to the next letter input display position.

Thus, desired letters can be inputted only by directly specifying the desired letters with the mouse L from among the inputted character string displayed in the input character display area of the display unit 18.

While the hiragana letter-to-Chinese character converting process has been illustrated with respect to FIGS. 3-7, a process for converting a particular alphabetical letter to another corresponding letter will be described next as another embodiment. FIGS. 9A,B and C show letter input and display states involved in a letter input process which includes edition of input letters with a pen among letters input from a software keyboard.

As shown in FIG. 9A, letters and a symbol are entered from the software keyboard 13c and displayed in an input display area of a display unit 18. A displayed letter "α" is obtained by touching a letter "A" on the software keyboard 13c with the pen P and then touching a function "convert" on the keyboard 13c with the pen.

When "α" and "=" are then found among in an input letter string displayed in the input display area of the display unit 18, and then range-specified while being slid with the pen P in the direction of arrow X, the "α" and "=" displayed in correspondence to the pen-touched position are displayed in an inverted manner (FIG. 9B).

By stopping the specifying of the displayed letter and symbol "α" and "=", that is, by detaching the pen from the display unit 18 , the letters and symbol are additionally stored as character data in inverted-displayed order in the input character storage register 16c of RAM 16, and displayed in pen-specified order in correspondence to the displayed position of the cursor (FIG. 9C). Simultaneously, the display position of the cursor is shifted to the next letter input and display position. Thus, the time required for conversion of data in the data input process is saved.

The present invention can be carried out in other various forms without departing from the spirit and main features thereof. For example, the present invention can effectively be carried out about Arabian/English cursive scripts.

The above embodiment is merely an example in every respects and should not be construed in an limited sense. The scope of the present invention should be limited by the attached claims and not restricted by the text of the specification. Various changes and modifications which fall within the scope of the claims should all be understood as belonging to the present invention.

Claims

1. A character input device which includes input means (12, 13) for providing data, and display means (18) for displaying the data provided by the input means, comprising:

    specifying means (13, P) for specifying any range of a part of the data displayed on the display means due to a user's operation; and
    data adding means (A9-A12) for adding data corresponding to the range of a part of the data specified by said specifying means as new input data to the data displayed by the displaying means.

2. The character input device according to claim 1, wherein said input means comprises handwriting input means (13) having a tablet for detecting a handwritten input; and
    said display means (18) displays a locus of the handwriting input by said handwriting input means.

3. The character input device according to claim 1, wherein the data comprise character data;
    said input means comprises:

    handwriting input means (13) having a tablet for detecting a handwriting input; and
    character recognizing means (A3) for recognizing a character of the character data provided by said handwriting input means; and
    said display means comprises recognized character display means (A4) for displaying as the data the character recognized by said character recognizing means.

4. The character input device according to claim 1, further comprising software keyboard display means (13C) for displaying a software keyboard having an array of characters on said display means; and
    said input means comprises:

    touch detecting means (13) comprising a tablet provided overlapping on said display means for detecting a touch input on the tablet; and
    touch input means (FIG. 7) responsive to the touching operation by said touch input means for providing as the data a character on the software keyboard corresponding to the touching operation by said touch input means.

5. The character input device according to claim 1, wherein said data comprises character data;

    said input means (12) comprises a keyboard for providing a character data by manipulating the keyboard; and
    said specifying means comprises mouse means (L of FIG. 8) for specifying a range of any part of the displayed character data.

6. The character input device according to claim 1, further comprising character converting means (13b) for converting an unfixed character to another type of character;
    said data adding means comprises:

    checking means (A10) for checking whether the character data in the range specified by said range specifying means is convertible to a different type of character data;
    unfixed character adding means (A11) responsive to said checking means checking that the character data in the range is convertible to the different type of character data for adding the checked data as unconverted unfixed character data to the character data displayed on said display means, whereby the unfixed character is converted to the different type of character data by said character converting means as requested.

7. The character input device according to claim 1,

wherein said data adding means comprises order data adding means (A9) for adding as a new data input the data of the range specified by said specifying means to the data displayed on said display means in order of specification.

8. A character input method which includes the steps of entering data (A1), and displaying the entered data on a display unit (A4), comprising:

   specifying a range of any part of the data displayed on the display unit due to a user's operation (A7); and
   adding data corresponding to the range of any part of the data specified by said specifying step as new input data to the data displayed on the display unit (A11, A12).

FIG.1

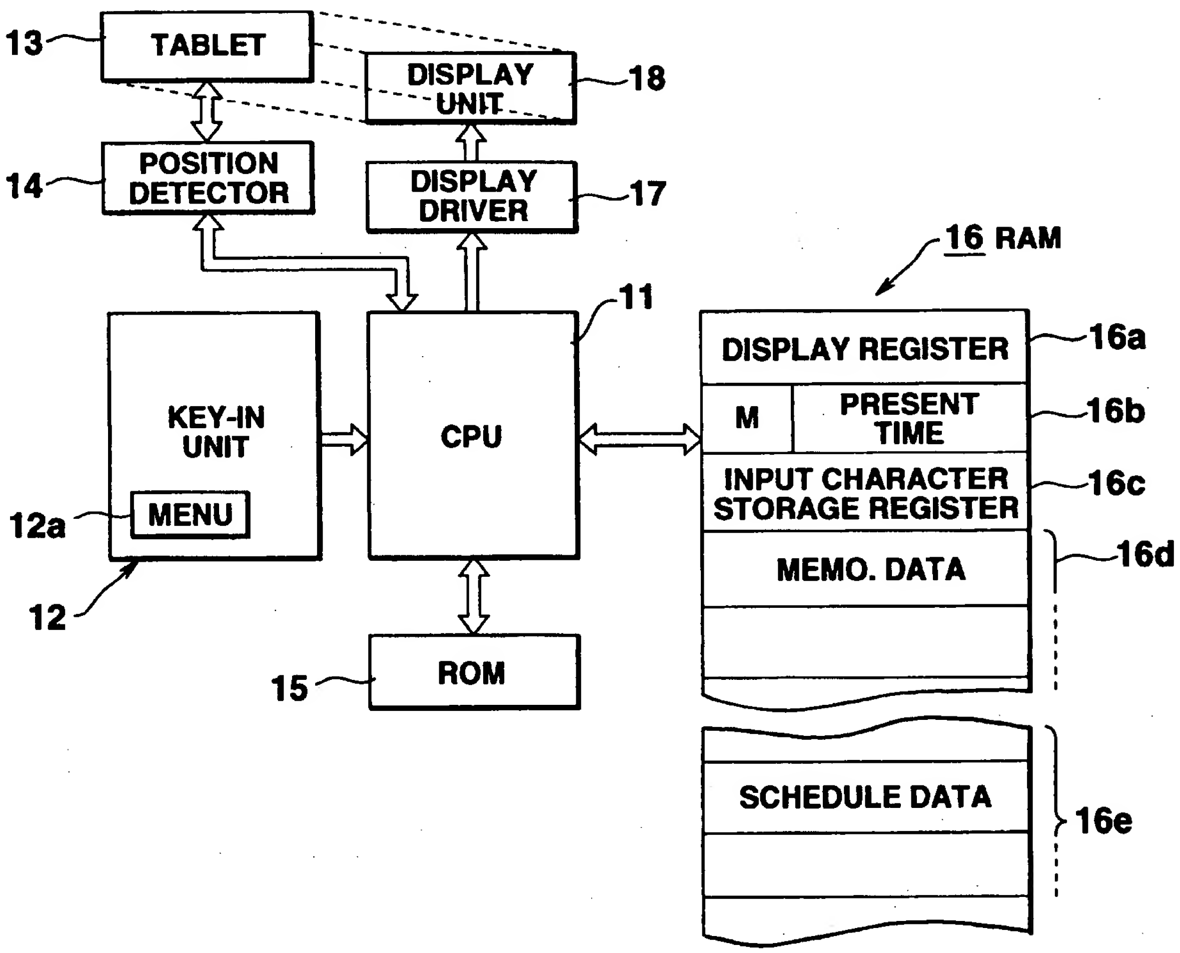

13
TABLET
14
POSITION DETECTOR
DISPLAY UNIT
18
DISPLAY DRIVER
17
16 RAM
11
KEY-IN UNIT
MENU
12a
12
CPU
15
ROM
DISPLAY REGISTER
16a
M
PRESENT TIME
16b
INPUT CHARACTER STORAGE REGISTER
16c
MEMO. DATA
16d
SCHEDULE DATA
16e

FIG.2

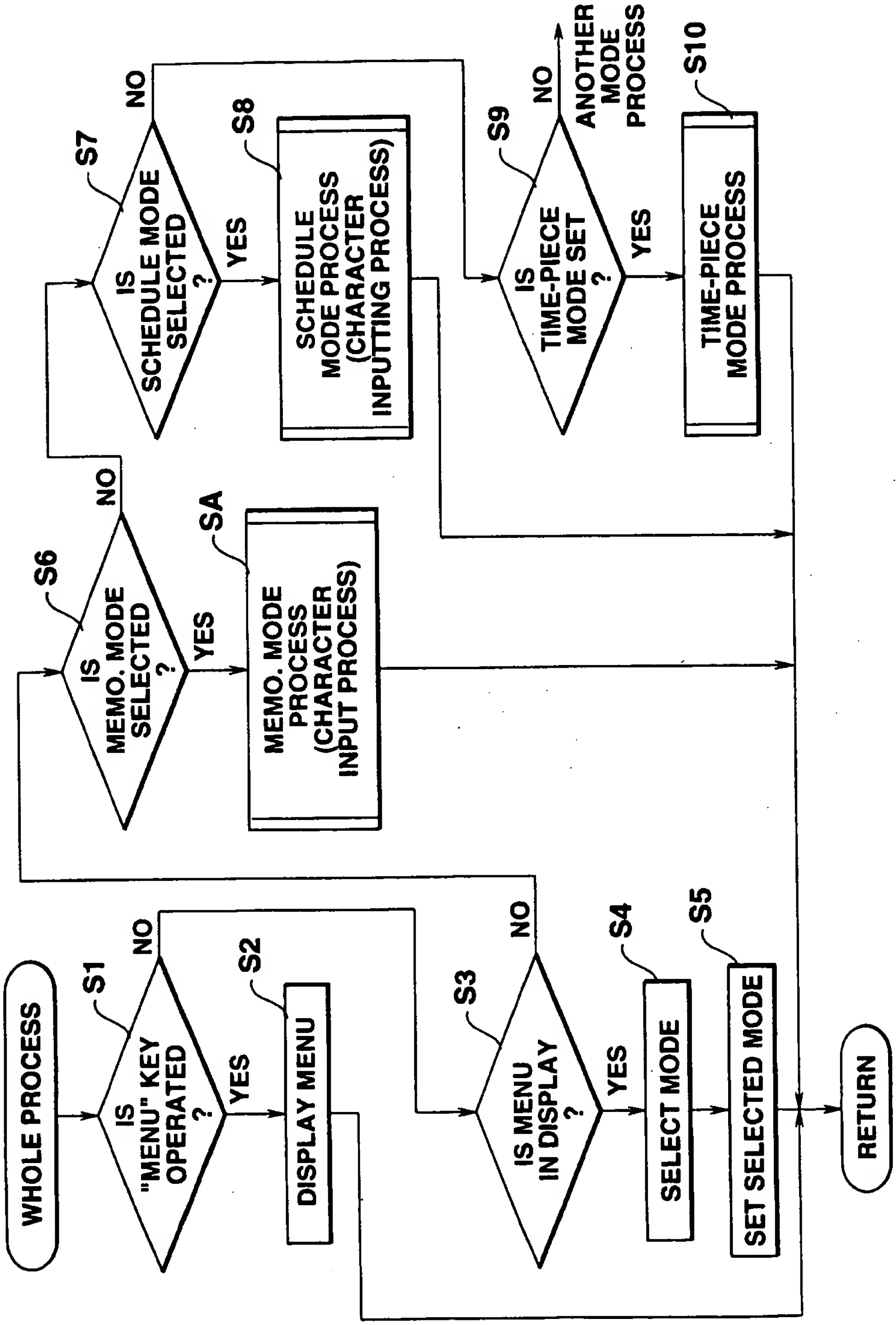

WHOLE PROCESS
S1
IS "MENU" KEY OPERATED ?
YES
NO
S2
DISPLAY MENU
S3
IS MENU IN DISPLAY ?
YES
NO
S4
SELECT MODE
S5
SET SELECTED MODE
RETURN
S6
IS MEMO. MODE SELECTED ?
YES
NO
SA
MEMO. MODE PROCESS (CHARACTER INPUT PROCESS)
S7
IS SCHEDULE MODE SELECTED ?
YES
NO
S8
SCHEDULE MODE PROCESS (CHARACTER INPUTTING PROCESS)
S9
IS TIME-PIECE MODE SET ?
YES
NO
ANOTHER MODE PROCESS
S10
TIME-PIECE MODE PROCESS

FIG.3

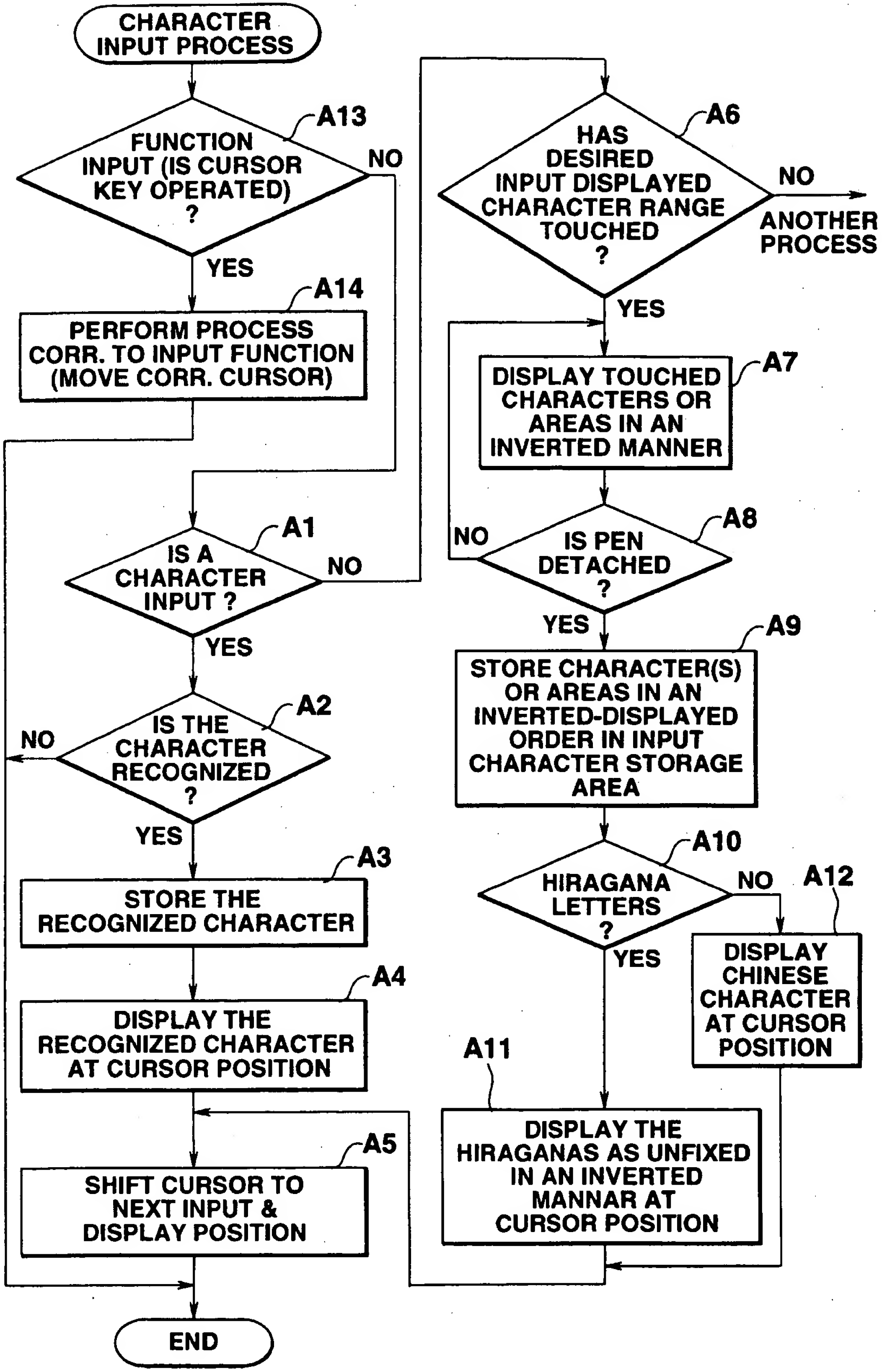
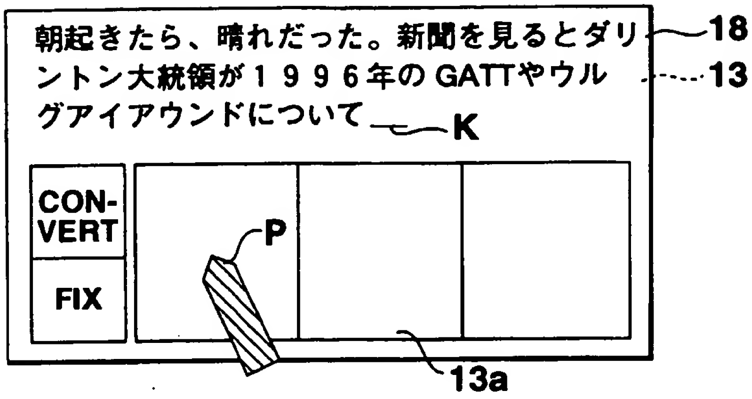
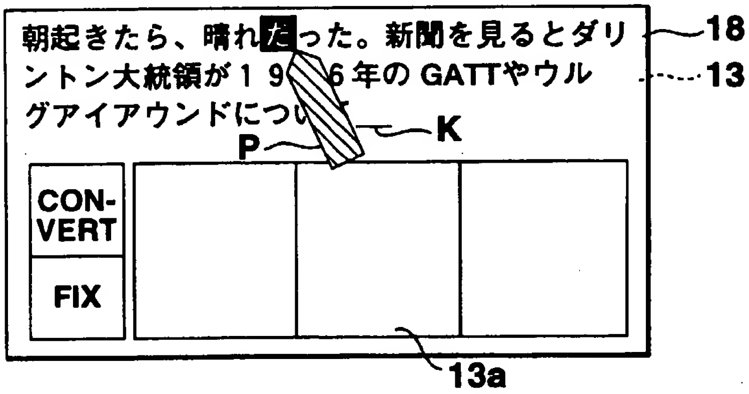

CHARACTER INPUT PROCESS
FUNCTION INPUT (IS CURSOR KEY OPERATED) ?
A13
NO
YES
A14
PERFORM PROCESS CORR. TO INPUT FUNCTION (MOVE CORR. CURSOR)
IS A CHARACTER INPUT ?
A1
NO
YES
IS THE CHARACTER RECOGNIZED ?
A2
NO
YES
STORE THE RECOGNIZED CHARACTER
A3
DISPLAY THE RECOGNIZED CHARACTER AT CURSOR POSITION
A4
SHIFT CURSOR TO NEXT INPUT & DISPLAY POSITION
A5
END
HAS DESIRED INPUT DISPLAYED CHARACTER RANGE TOUCHED ?
A6
NO
ANOTHER PROCESS
YES
DISPLAY TOUCHED CHARACTERS OR AREAS IN AN INVERTED MANNER
A7
IS PEN DETACHED ?
A8
NO
YES
STORE CHARACTER(S) OR AREAS IN AN INVERTED-DISPLAYED ORDER IN INPUT CHARACTER STORAGE AREA
A9
HIRAGANA LETTERS ?
A10
NO
YES
A12
DISPLAY CHINESE CHARACTER AT CURSOR POSITION
A11
DISPLAY THE HIRAGANAS AS UNFIXED IN AN INVERTED MANNAR AT CURSOR POSITION

FIG.4A


朝起きたら、晴れだった。新聞を見るとダリ
ントン大統領が１９９６年のGATTやウル
グアイアウンドについて

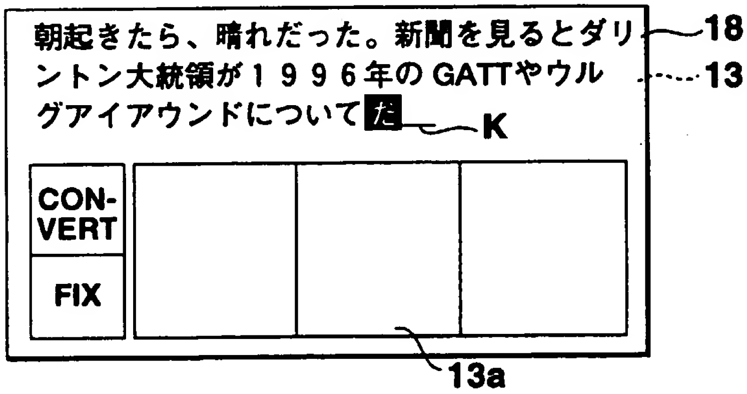
18
13
K
CON-VERT
FIX
P
13a

FIG.4B


朝起きたら、晴れだった。新聞を見るとダリ
ントン大統領が１９ ６年のGATTやウル
グアイアウンドについ

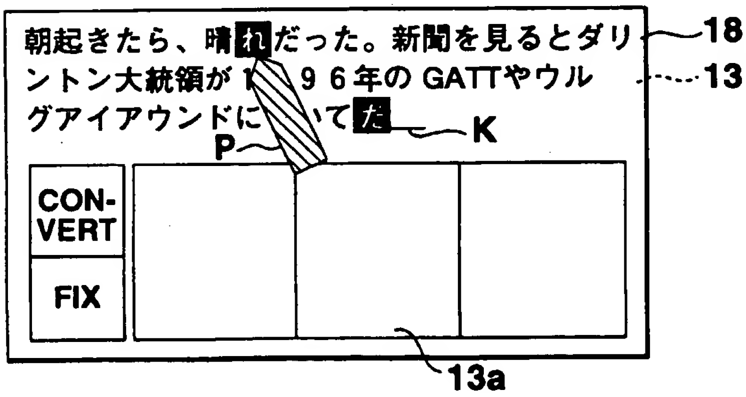
18
13
K
P
CON-VERT
FIX
13a

FIG.4C


朝起きたら、晴れだった。新聞を見るとダリ
ントン大統領が１９９６年のGATTやウル
グアイアウンドについてた

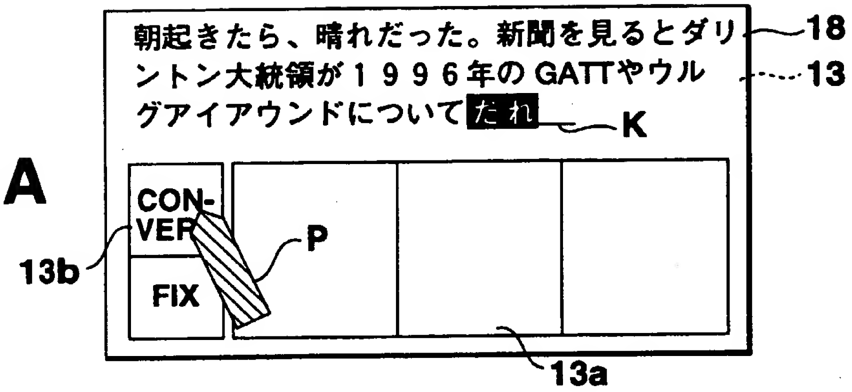
18
13
K
CON-VERT
FIX
13a

FIG.4D


朝起きたら、晴れだった。新聞を見るとダリ
ントン大統領が ９６年のGATTやウル
グアイアウンドに いてた

18
13
K
P
CON-VERT
FIX
13a

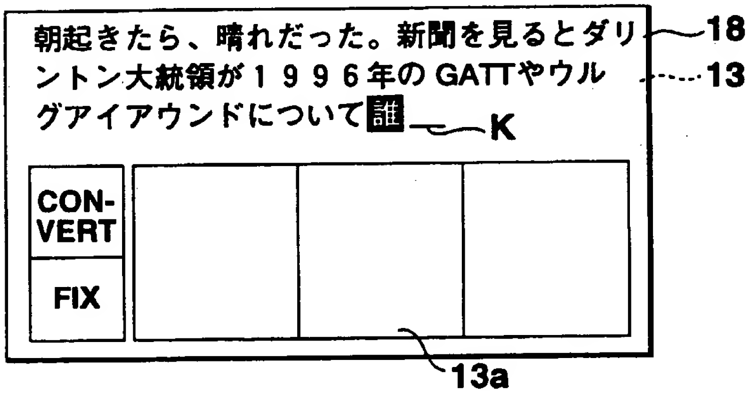
FIG.5A



朝起きたら、晴れだった。新聞を見るとダリ
ントン大統領が１９９６年のGATTやウル
グアイアウンドについてたれ

18
13
K
CON-
VERT
FIX
P
13b
13a

FIG.5B



朝起きたら、晴れだった。新聞を見るとダリ
ントン大統領が１９９６年のGATTやウル
グアイアウンドについて誰

18
13
K
CON-
VERT
FIX
13a

FIG.6A

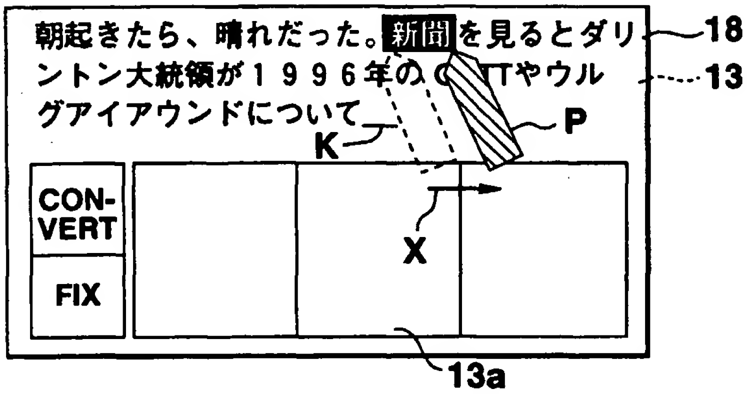

朝起きたら、晴れだった。新聞を見るとダリ
ントン大統領が１９９６年のG TTやウル
グアイアウンドについて
18
13
P
K
CON-
VERT
FIX
X
13a

FIG.6B

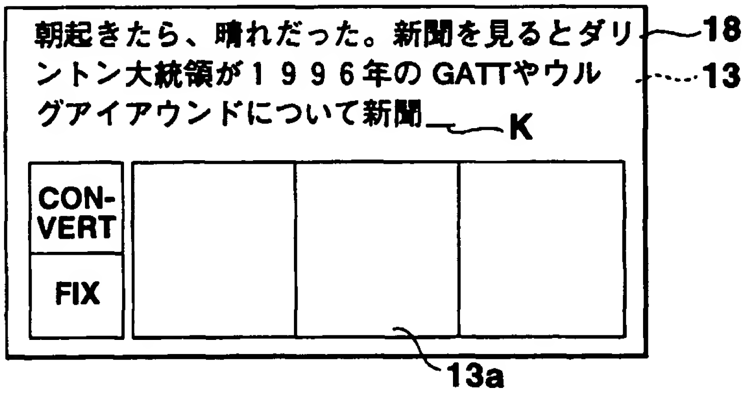
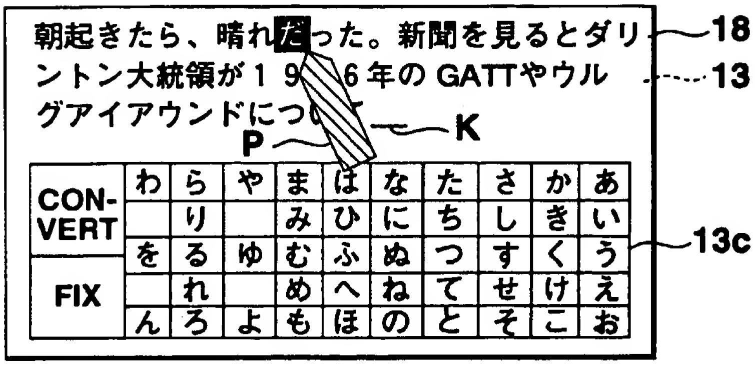

朝起きたら、晴れだった。新聞を見るとダリ
ントン大統領が１９９６年の GATTやウル
グアイアウンドについて新聞
18
13
K
CON-
VERT
FIX
13a

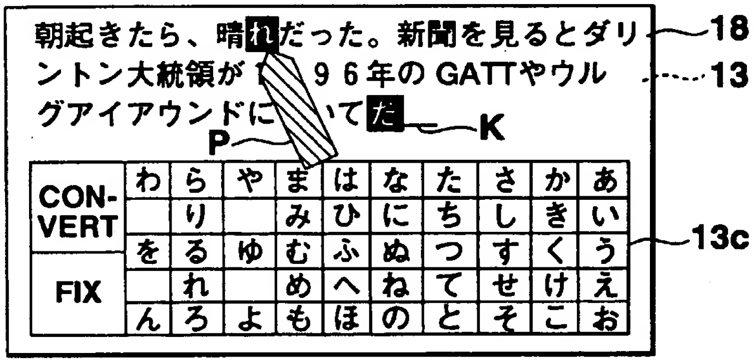
FIG.7A



朝起きたら、晴れだった。新聞を見るとダリ
ントン大統領が１９ ６年の GATTやウル
グアイアウンドにつ

CON-VERT	わ	ら	や	ま	は	な	た	さ	か	あ
		り		み	ひ	に	ち	し	き	い
	を	る	ゆ	む	ふ	ぬ	つ	す	く	う
FIX		れ		め	へ	ね	て	せ	け	え
	ん	ろ	よ	も	ほ	の	と	そ	こ	お

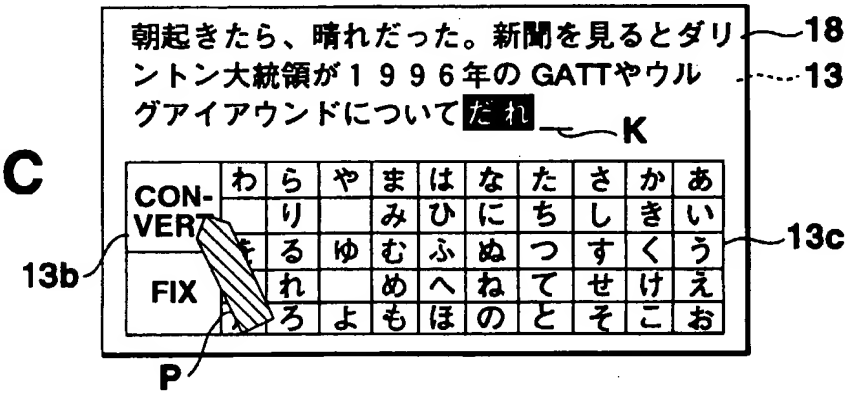
FIG.7B



朝起きたら、晴れだった。新聞を見るとダリ
ントン大統領が ９６年の GATTやウル
グアイアウンドに いてだ

CON-VERT	わ	ら	や	ま	は	な	た	さ	か	あ
		り		み	ひ	に	ち	し	き	い
	を	る	ゆ	む	ふ	ぬ	つ	す	く	う
FIX		れ		め	へ	ね	て	せ	け	え
	ん	ろ	よ	も	ほ	の	と	そ	こ	お

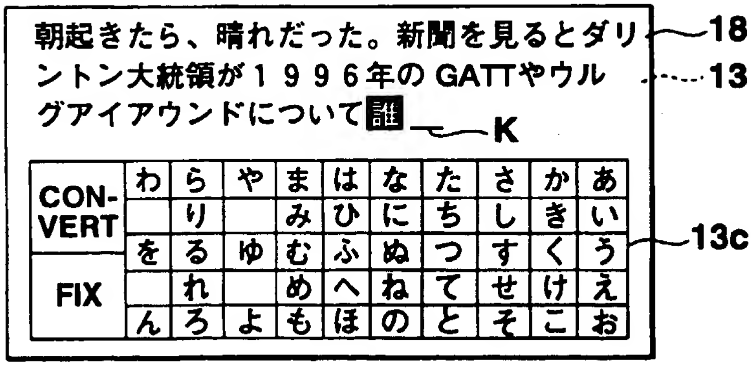
FIG.7C



朝起きたら、晴れだった。新聞を見るとダリ
ントン大統領が１９９６年の GATTやウル
グアイアウンドについてだれ

CON-VERT	わ	ら	や	ま	は	な	た	さ	か	あ
		り		み	ひ	に	ち	し	き	い
	を	る	ゆ	む	ふ	ぬ	つ	す	く	う
FIX		れ		め	へ	ね	て	せ	け	え
	ん	ろ	よ	も	ほ	の	と	そ	こ	お

FIG.7D



朝起きたら、晴れだった。新聞を見るとダリ
ントン大統領が１９９６年の GATTやウル
グアイアウンドについて誰

CON-VERT	わ	ら	や	ま	は	な	た	さ	か	あ
		り		み	ひ	に	ち	し	き	い
	を	る	ゆ	む	ふ	ぬ	つ	す	く	う
FIX		れ		め	へ	ね	て	せ	け	え
	ん	ろ	よ	も	ほ	の	と	そ	こ	お

FIG.8A

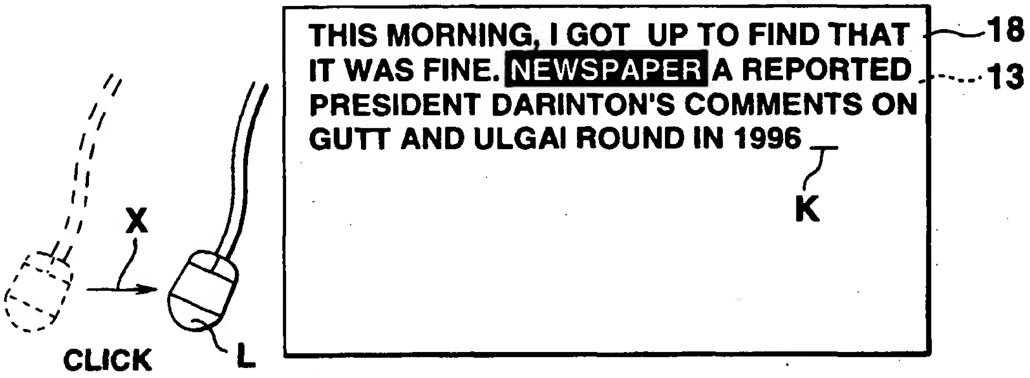

THIS MORNING, I GOT UP TO FIND THAT IT WAS FINE. NEWSPAPER A REPORTED PRESIDENT DARINTON'S COMMENTS ON GUTT AND ULGAI ROUND IN 1996

FIG.8B

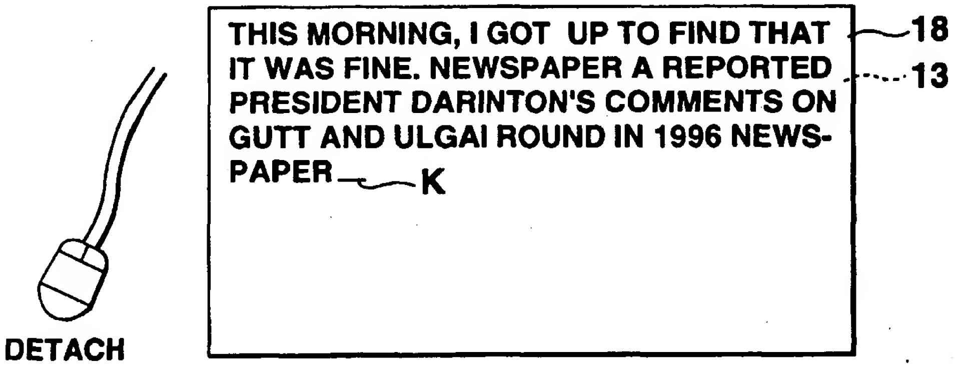

THIS MORNING, I GOT UP TO FIND THAT IT WAS FINE. NEWSPAPER A REPORTED PRESIDENT DARINTON'S COMMENTS ON GUTT AND ULGAI ROUND IN 1996 NEWSPAPER

FIG.9A

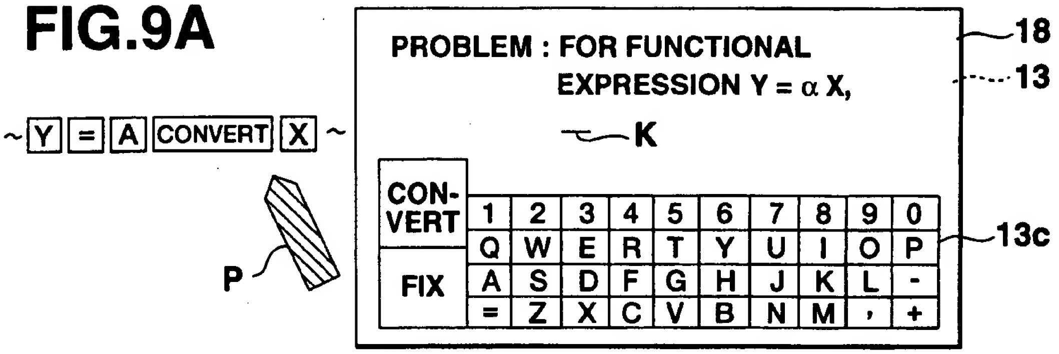

~ Y = A CONVERT X ~
P
PROBLEM : FOR FUNCTIONAL
EXPRESSION Y = α X,
K
CON-
VERT
FIX
1 2 3 4 5 6 7 8 9 0
Q W E R T Y U I O P
A S D F G H J K L -
= Z X C V B N M , +
18
13
13c

FIG.9B

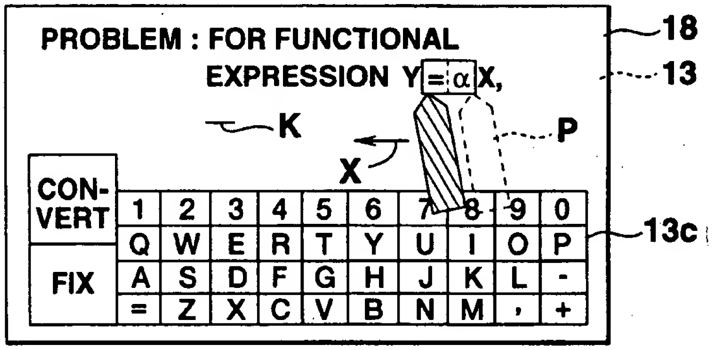
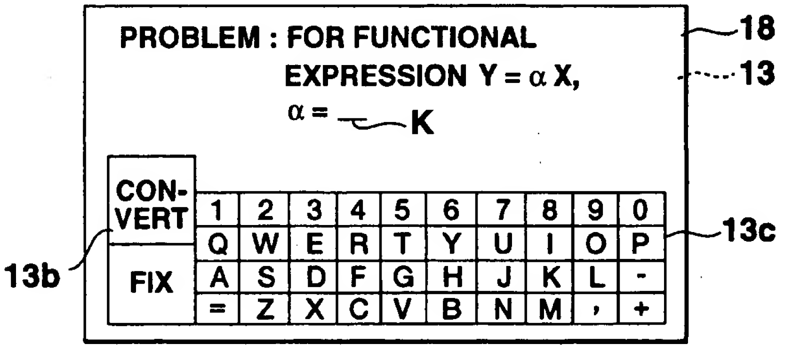

PROBLEM : FOR FUNCTIONAL
EXPRESSION Y = α X,
K
X
P
CON-
VERT
FIX
1 2 3 4 5 6 7 8 9 0
Q W E R T Y U I O P
A S D F G H J K L -
= Z X C V B N M , +
18
13
13c

FIG.9C


PROBLEM : FOR FUNCTIONAL
EXPRESSION Y = α X,
α =
K
CON-
VERT
FIX
13b
1 2 3 4 5 6 7 8 9 0
Q W E R T Y U I O P
A S D F G H J K L -
= Z X C V B N M , +
18
13
13c

European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 11 2066

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	WO 94 09438 A (GO CORP) * page 1, line 16 - page 3, line 38 * * page 7, line 36 - page 8, line 35 * * page 10, line 37 - page 11, line 13 * * figures 2B,2C,4A,4B * * figures 8A-8H,9A-9F *	1,5,6,8	G06F3/033 G06F17/28
A	---	2-4,7	
X	EP 0 496 297 A (SONY CORP) * column 7, line 31 - column 8, line 34 * * column 11, line 25 - column 12, line 1 * * figures 1,17 *	1-3,6	
A	---	7,8	
X	PATENT ABSTRACTS OF JAPAN vol. 015, no. 426 (P-1269), 29 October 1991 & JP 03 176724 A (SONY CORP), 31 July 1991, * abstract * ---	1-3,6	
X	EP 0 660 218 A (XEROX CORP) * column 7, line 6 - column 8, line 25 * * column 22, line 24-39 * * figures 7-10,20 * ---	1,4,5,7	TECHNICAL FIELDS SEARCHED (Int.Cl.6) G06F
A	US 5 535 119 A (ITO JUN ET AL) * column 33, line 24 - column 39, line 32; figures 5,7-13C * -----	6	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	5 November 1997	Baldan, M

CATEGORY OF CITED DOCUMENTS

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